Remediation of Ordnance Contamination Tierrasanta Community San Diego, California

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by

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BACKGROUND

The decontamination of formerly used military-related training sites which still contain unexploded ordnance is becoming a matter of increasing concern to the public, such as the site of Tierrasanta Community, San Diego, California.

As previously presented, the Huntsville Division, Corps of Engineers (CEHND), has been given responsibility for remediation of Formerly Used Defense Sites contaminated with explosive ordnance. This presentation describes the development of our first remediation project under this program. The Tierrasanta site is typical of a former military training site which has developed into an ordnance remediation project. (See Figure 1)

During the first World War some of the Tierrasanta site was used by the U.S. Army as artillery and machinegun ranges. No structures remained after demobilization and real estate records do not document land use. In the 1930's the Marine Corps leased over 19,000 acres for training. After World War II broke out in Europe, it was expanded into a Marine Corps Training Center and designated Camp Elliott. Weapons training by the Marines ranged from .22 caliber rifles to 155mm field artillery. Figure 2 is a list of items found during the Feasibility Study. Figure 3 shows the range of U.S. Ordnance and why such a large area is contaminated.

In 1944, the Marines relocated to Camp Pendleton and control of Camp Elliott was turned over to the Navy. Various military units used Camp Elliott but no weapons training was conducted. In 1960, Camp Elliott was closed and annexed by the City of San Diego. In 1962, the General Services Administration (GSA) began selling portions of the former Camp Elliott for civilian uses. Parcels of land were sold over a several year period.

Several surface clearance operations were conducted to remove unexploded ordnance items. One was accomplished by the Navy in 1964, a second in 1965 by the Marine Corps and a third by the U.S. Army in 1973.

In 1970, the subdivision of Tierrasanta was formally opened and approximately 1200 single family homes were sold in a few months. Over 6000 homes have been build on the site since then. In December 1983, two young boys of the Tierrasanta Community were killed and a third was seriously injured when a 37mm shell they had found exploded.

PROJECT ASSIGNMENT

The sequence of events from a tragedy to an ordnance clearance project was as follows:

10 Dec 83	Two boys killed by exploding 37mm shell.

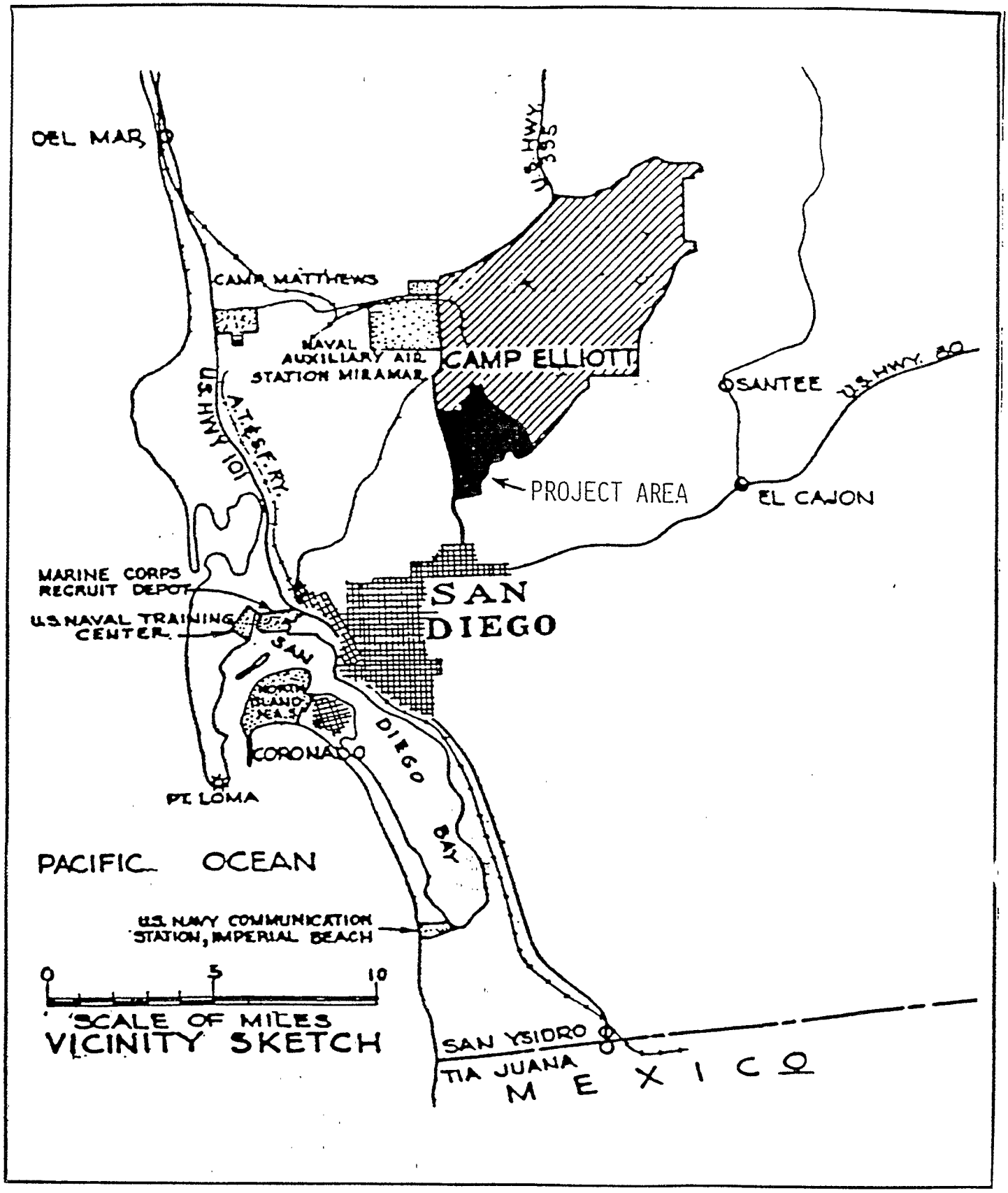

Figure 1
Project Location

		SUBAREAS				
ITEM TYPE	TOT	A	B	C	E	F
Fragments	954	94	30	585	77	168
Ordnance Clips	231	41	10	131	6	43
Associated Belt Links (7.62, 30, 50)	147		10	137		
Shotgun Shells	116	22		28	40	26
5.56-Cal Cartridges	110	33		44	9	24
22-Cal Cartridges	100			1	95	4
Assorted Slugs (2.23,5.56,30,45,50,308,lead)	51	6		8	8	29
7.62 Cartridges	42			42		
M48 Fuzes	16			8		8
81-MM Mortars	13					13
75-MM Projectiles	12	1		4	4	3
Nose Caps	11			3	2	6
3" Projectiles	8	1		4	2	1
M1907 Fuzes	6			6		
Lead Balls	5				5	
30-Cal Cartridges	5					5
Fuzes (Unknown types + stems)	5	4		1		
60-MM Mortars	5					5
Tracers	3					3
Grenade Spoons	3			3		
Base Plugs	3	1		1		1
3" Base Plates	2			2		
Mk 11 Mod 9 (37-MM)	2			2		
6" Projectiles	2				2	
M-2 Antipersonnel	2				2	
45-Cal Cartridges	2			1		1
105-MM Projectiles	2				2	
Mk 23 Practice Bombs	1				1	
Primer	1	1				
M38 Fuze	1	1				
50-Cal Cartridge	1					1
TOTAL	1864	205	50	1013	255	341

Figure 2

A. U.S. 81 MM MORTAR

B. U.S. 37 MM ANTI TANK GUN

C. U.S. 105 MM HOWITZER

D. U.S. 155 MM HOWITZER

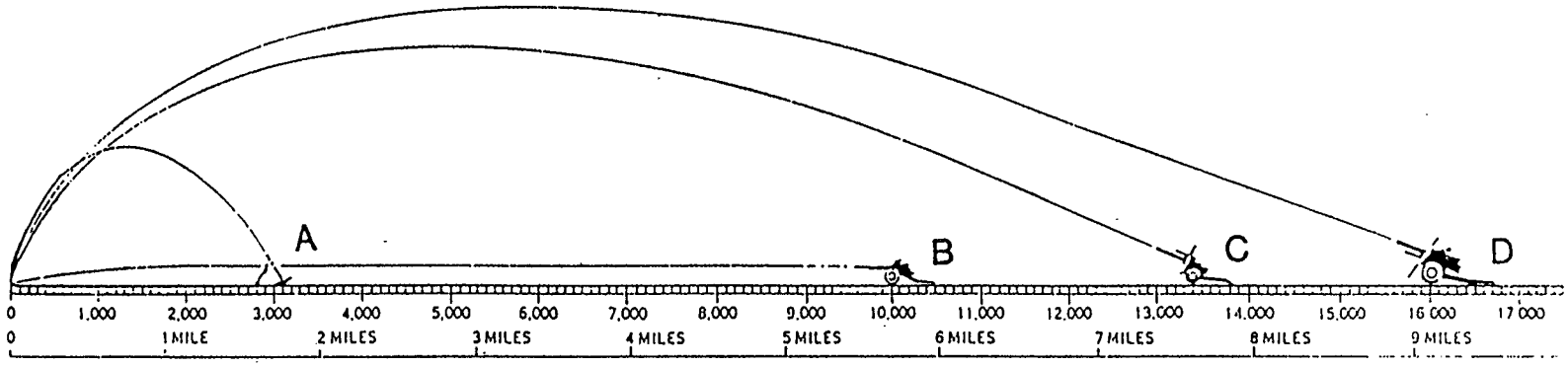

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Figure 3

26 Feb 85	HQUSACE directs CEHND to conduct site survey of Former Camp Elliott.
Apr 85	Site survey by CEHND and Los Angeles District.
17 Sep 85	Former Camp Elliott determined to be eligible for remediation under Defense Evironmental Restoration Program - Formerly Used Defense Sites (DERP-FUDS).
26 Oct 85	HQUSACE directs CEHND to prepare feasibility study to remediate ordnance problem.
28 Feb 86	Approval of project plan.
Apr-Jun 86	Site visits and public meetings.
Jun-Jul 86	Scope of Work completed and selection of A-E.
25 Sep 86	Proposal of A-E completed and contract awarded.
14 Nov-19 Dec 86	Surface and subsurface ordnance sweeps by A-E and subcontractors.
29 Apr 87	Public workshop in Tierrasanta Community. Presented alternatives and received comments.
6 Nov 87	Draft FS and EIS to EPA.
3 Dec 87	Public hearing on FS/EIS.
6 Jun 88	Final FS/EIS to EPA.
5 Aug 88	Draft Scope of Work and Acquisition Plan drafted.
19 Aug 88	Record of Decision signed by Deputy Assistant Secretary of Defense (Environment).
15 Sep 88	CBD announcement published.
21 Oct 88	Selection Board - A-E selected.
20 Jan 89	A-E Design and Price Proposal received (3 times the Government Estimate).

9 Mar 89	Revised proposal received.
3-24 Mar 89	Negotiated with A-E to impasse.
5 Apr 89	Began design inhouse. Los Angeles District to provide aerial survey and photogrammetry. Navy property added to project.
Feb-Mar 90	Design completed. Environmental Assessment for Navy property received
28 Mar 90	Advertised in CBD.
10 Apr 90	Pre-Bid Conference in San Diego.
8 May 90	Bids opened at CEHND.
9 May 90	Protest received from unsuccessful bidder.
Present	Awaiting decision on protest. Low bidder attempts to adjust bid due to error.

DEVELOPMENT OF DESIGN

The design of the ordnance removal project became more complicated as it progressed. The decision had been made early in the design phase to have a construction contract. So the design had to be in sufficient detail that a contractor could submit a fixed-price bid. Drawings were developed to describe the terrain, brush types, and types of brush clearing requirements in great detail (See Table 1). Estimates were also made on quantities of ordnance, ordnance-related debris and nonordnance-related debris were contained in each area. All metal debris had to be removed to reduce interference with the ordnance locator.

Environmental constraints were a big consideration in the design. The six subareas required brush clearing with exception of one (See Table 2). Some brush clearing could be done by controlled burning, but only at certain times of the year. Some areas had vernal pools where the mesa mint grows. The mesa mint is on the Federal Endangered Species List. The habitat of the black-tailed gnatcatcher had to be treated as a seasonal project. Labor categories included not only laborers and ordnance specialists, but a biologist and archaeologist as well.

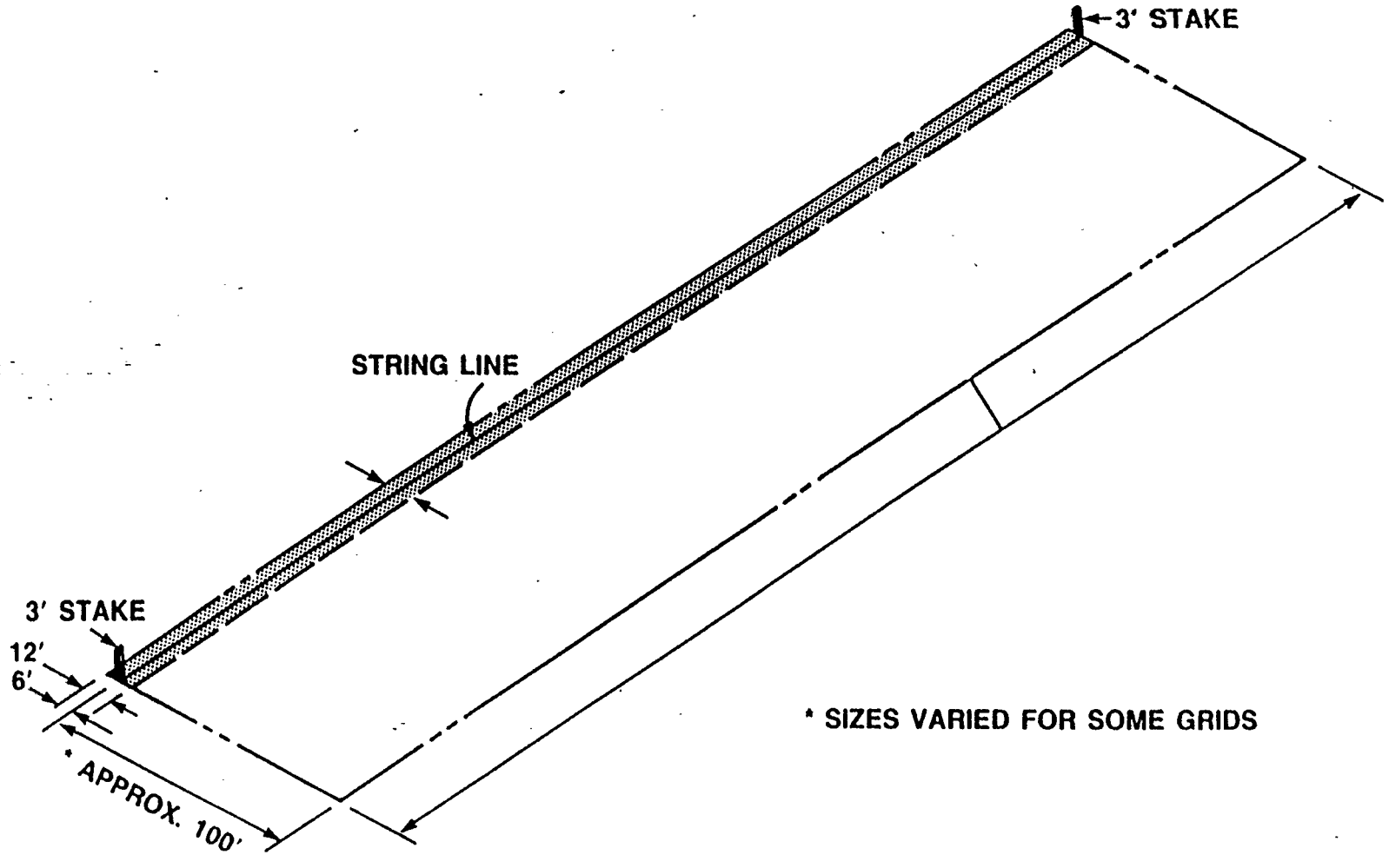
The ordnance clearance operation was almost as difficult to define. Parameters for searching, excavation, live ordnance versus scrap and staging of live ordnance had to be described in enough detail to obtain a fixed-price bid. Figure 4 shows a sample grid designed to ensure coverage of the entire area with ordnance locators.

TABLE 1

Terrain Type	Vegetation	Slope
1	Clear	Level - 0 -10 degrees
2	Grassy/Brushy	Level - 0- 10 degrees
3	Brushy/Trees	Level - 0 -10 degrees
4	Clear	Moderately Sloped 10-30 degrees
5	Grassy/Brushy	Moderately Sloped 10-30 degrees
6	Brushy/Trees	Moderately Sloped 10-30 degrees
7	Clear	Steep-Greater than 30 degrees
8	Grassy/Brushy	Steep-Greater than 30 degrees
9	Brushy/Trees	Steep-Greater than 30 degrees

TABLE 2

Subarea	Size(Acres)	Options
A	167	1. Reacquire by Government 2. Manual Brush Clearing 3. Fence
B	85	1. Manual Brush Clearing 2. Fence - Hwy Right-of-Way
C	358	1. Manual Brush Clearing 2. Ordnance Sweep
D	58	1. No Action-Portion being Developed 2. Ordnance Removal in Remainder
E	454	1. Control Burning 2. Manual Brush Clearing 3. Ordnance Sweep
F	774	1. Manual Brush Removal 2. Ordnance Sweep



SAMPLE GRID LAYOUT

EXPLOSIVE ORDNANCE SURVEY

TIERRASANTA COMMUNITY

SAN DIEGO CALIFORNIA

Figure 4

LESSONS LEARNED

a. Construction contract is probably not the best type of contract for this activity. There are too many variables to define with the necessary detail to support a fixed-price bid. A contract for Time Materials or Costs plus fee would be more appropriate.

b. Quality Control is very difficult to define on a project where 100% accuracy can never be guaranteed. CEHND will have an ordnance removal team for quality assurance. Acceptance will be based on a resurvey of some work areas and a field judgment of the contractor's diligence.

c. Future projects do not require a Remedial Investigation/Feasibility Study (RI/FS). When a project is assigned, an Engineering Evaluation and Cost Analysis (EE/CA) will be performed and go to contract. Must comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) but do not require EPA approval prior to a project.

CONTRACT STATUS

The design was completed in March 1990 and was advertised in the Chicago Business Daily (CBD). A pre-bid conference was held in San Diego to allow potential bidders to ask questions and have them answered in a group setting. Bids were opened at Huntsville Division on 8 May 1990. There was a wide disparity in the bids received. The bids ranged from approximately one-half the government estimate to four times the government estimate. One bidder lodged two protests. The apparent low bidder was subjected to a qualification audit due to concerns about their ability to perform the contract. The apparent low bidder also alleged an error in the bid and requested an adjustment. We are awaiting decisions on these issues from Headquarters, Corps of Engineers. CEHND has recommended all the allegations be rejected.

I had hoped to be able to present a successful conclusion to this project development. I had planned to have slides showing personnel searching with ordnance locators and digging with excavating tools. Hopefully this will be a short delay and we can begin to remediate this ordnance hazard soon.